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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,544	09/26/2003	Daniel R. Tretter	200312433-1	4638

7590 06/22/2005

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EXAMINER	
HARRISON, CHANTE E	

ART UNIT	PAPER NUMBER
2677	

DATE MAILED: 06/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/672,544	TRETTER ET AL.	
	Examiner	Art Unit	
	Chante Harrison	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/13/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is responsive to the following communication: Amendment filed on 4/4/05. ***This action is made FINAL.***

2. Claims 1-20 are pending in this application. Claims 1, 8, 12 and 19 are independent claims. Claims 12 and 19 have been amended.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seiichiro Tabata, US 6,384,816 B1, 5/2002.

As per independent claim 1, Tabata discloses receiving image data for a plurality of image frames (i.e. input of a composite video signal) (col. 7, ll. 43-45); generating at least one sub-frame for each image frame based on the received image data (i.e. the division of the image signal into multiple pixels representative of image data) (col. 2, ll. 25-30); displaying the sub-frames for each image frame in a first set of the plurality of image frames at a first plurality of spatially offset

positions (i.e. pixel positions are transitioned in vertical and horizontal directions to achieve spatial offset) (col. 2, ll. 31-44).

Tabata fails to specifically disclose displaying the sub-frames for each image frame in a second set of the plurality of image frames at a second plurality of spatially offset positions that is different than the first plurality of spatially offset positions.

Tabata teaches one frame is represented by dividing image signals into four images (col. 1, ll. 25-27); and a delta array display having multiple frames (Fig. 4) where each frame has pixel positions transitioned in either a vertical and/or horizontal distance from the first standard pixel position (col. 2, ll. 30-44).

It would have been obvious to one of skill in the art to incorporate sub-frames of consecutive image frames displayed at different pluralities of spatially offset positions with the disclosure of Tabata because by vertically and/or horizontally positioning each sub-frame pixel based on the standard position of the first sub-frame pixel relative to the image frame where each image frame occupies a different display position, the position of each transitioned sub-frame pixel will be spatially offset from the sub-frame pixels of consecutive image frames.

As per dependent claim 2, Tabata discloses the sub-frames for each image frame are

displayed with a temporal offset (i.e. the input composite video signal is input to a timinig circuit, such that the pixels representing sub-frames are transmitted to the

display by the timing signal; by driving the pixels at different times suggests that the pixels are temporally offset) (col. 7, ll. 48-55).

As per dependent claim 3, Tabata fails to specifically disclose the sub-frames for consecutive image frames are displayed at different pluralities of spatially offset positions.

Tabata teaches one frame is represented by dividing image signals into four images (col. 1, ll. 25-27); and a delta array display having multiple frames (Fig. 4) where each frame has pixel positions transitioned in either a vertical and/or horizontal distance from the first standard pixel position (col. 2, ll. 30-44).

It would have been obvious to one of skill in the art to incorporate sub-frames of consecutive image frames displayed at different pluralities of spatially offset positions with the disclosure of Tabata because by vertically and/or horizontally positioning each sub-frame pixel based on the standard position of the first sub-frame pixel relative to the image frame where each image frame occupies a different display position, the position of each transitioned sub-frame pixel will be spatially offset from the sub-frame pixels of consecutive image frames.

As per dependent claim 4, Tabata discloses the first and the second pluralities of spatially offset positions each include two positions (Fig. 4).

As per dependent claim 5, Tabata fails to specifically disclose the first plurality of spatially offset positions includes a first position, and a second position diagonally offset from the first position in a first diagonal direction.

Tabata teaches by varying the order of the applied voltage to the liquid crystal display cells the order of the pixel positions are controlled in a crossing order (Fig. 11; col. 7, ll. 15-25).

It would have been obvious to one of skill in the art to incorporate the second position diagonally offset from the first with the disclosure of Tabata because varying the order of the applied voltage to the display cells alters the crossing order of the pixel positions such that one position would be diagonal from a second position.

As per dependent claim 6, Tabata discloses the second plurality of spatially offset positions includes a third position spatially offset from the first and the second positions, and a fourth position diagonally offset from the third position in a second diagonal direction that is substantially perpendicular to the first diagonal direction (Fig. 11).

As per dependent claim 7, Tabata discloses wherein the first and the second pluralities of spatially offset positions each include four positions (Fig. 10).

As per independent claim 8, Tabata discloses a buffer adapted to receive image data for first and second images (i.e. input composite video signals are stored in

memory) (Fig. 12 "22"); an image processing unit configured to define first and second sub-frames corresponding to the first image (col. 2, ll. 30-40; Fig. 4); and a display device (Fig. 12 "26") adapted to alternately display the first sub-frame in a first position and the second sub-frame in a second position spatially offset from the first position (i.e. pixels 1 and 2 are spatially displayed) (Fig. 4 & 10), and alternately display the third sub-frame in a third position spatially offset from the first position and the second position (i.e. pixel 3 is spaced apart from pixels 1 and 2) (Fig. 4 & 10), and the fourth sub-frame in a fourth position spatially offset from the first position, the second position, and the third position n (i.e. pixel 4 is spaced apart from pixels 1, 2 and 3) (Fig. 4 & 10).

Tabata fails to specifically disclose third and fourth sub-frames corresponding to the second image.

Tabata teaches one frame is represented by dividing image signals into four images (col. 1, ll. 25-27); and a delta array display having multiple frames (Fig. 4) where each frame has pixel positions transitioned in either a vertical and/or horizontal distance from the first standard pixel position (col. 2, ll. 30-44).

It would have been obvious to one of skill in the art to incorporate sub-frames of consecutive image frames displayed at different pluralities of spatially offset positions with the disclosure of Tabata because by vertically and/or horizontally positioning each sub-frame pixel based on the standard position of the first sub-frame pixel relative to the image frame where each image frame occupies a different display position, the position of each transitioned sub-frame

pixel will be spatially offset from the sub-frame pixels of consecutive image frames such that third and fourth sub-frame of a second image frame would be spatially offset from the sub-frames of a first image frame.

As per dependent claim 9, Tabata fails to specifically disclose the second position is diagonally offset from the first position in a first diagonal direction.

Tabata teaches by varying the order of the applied voltage to the liquid crystal display cells the order of the pixel positions are controlled in a crossing order (Fig. 11; col. 7, ll. 15-25).

It would have been obvious to one of skill in the art to incorporate the second position diagonally offset from the first with the disclosure of Tabata because varying the order of the applied voltage to the display cells alters the crossing order of the pixel positions such that one position would be diagonal from a second position.

As per dependent claim 10, Tabata discloses wherein the fourth position is diagonally offset from the third position in a second diagonal direction that is substantially
perpendicular to the first diagonal direction (Fig. 10).

As per dependent claims 11 and 18, Tabata discloses the image processing unit is configured to define a first set of four sub-frames corresponding to the first image (col. 1, ll. 25-27), and wherein the display device is adapted to alternately

display the first set of four sub-frames in a first set of four spatially offset positions (Fig. 4 & 10).

Tabata fails to specifically discloses defining a second set of four sub-frames corresponding to the second image and alternately display the second set of four sub-frames in a second set of four spatially offset positions that is different than the first set of four spatially offset positions.

Tabata teaches one frame is represented by dividing image signals into four images (col. 1, ll. 25-27); and a delta array display having multiple frames (Fig. 4) where each frame has pixel positions transitioned in either a vertical and/or horizontal distance from the first standard pixel position (col. 2, ll. 30-44).

It would have been obvious to one of skill in the art to incorporate sub-frames of consecutive image frames displayed at different pluralities of spatially offset positions with the disclosure of Tabata because by vertically and/or horizontally positioning each sub-frame pixel based on the standard position of the first sub-frame pixel relative to the image frame where each image frame occupies a different display position, the position of each transitioned sub-frame pixel will be spatially offset from the sub-frame pixels of consecutive image frames.

As per independent claim 12, Tabata discloses means for receiving a set of consecutive high resolution images (col. 1, ll. 3-6; col. 2, ll. 28-32); means for generating a plurality of sub-frames for each of the high resolution images (col. 7, ll. 43-45); means for alternately displaying the sub-frames for each of the high

resolution images at a set of spatially offset positions (Fig. 4); and means for automatically varying the set of spatially offset positions for at least one of the high resolution images (col. 2, ll. 25-33; Fig. 9 & 10).

Tabata fails to specifically disclose the sub-frames are low resolution.

Tabata discloses the sub-frames are a division of the high resolution image signal into multiple pixels representative of image data (col. 2, ll. 25-30).

It would have been obvious to one of skill in the art to incorporate low resolution sub-frames with the disclosure of Tabata because the division of a high resolution image into multiple pixels where the pixels are representative of image data suggests that each divided pixel is a lower resolution image of the high resolution image from which it was derived.

As per dependent claims 13, 15 and 20, Tabata fails to specifically disclose wherein the means for varying is configured to vary the set of spatially offset positions such that the sub-frames for consecutive high resolution images are displayed at different sets of spatially offset positions.

Tabata teaches one frame is represented by dividing image signals into four images (col. 1, ll. 25-27); and a delta array display having multiple frames (Fig. 4) where each frame has pixel positions transitioned in either a vertical and/or horizontal distance from the first standard pixel position (col. 2, ll. 30-44).

It would have been obvious to one of skill in the art to incorporate sub-frames of consecutive image frames displayed at different pluralities of spatially offset positions with the disclosure of Tabata because by vertically and/or

horizontally positioning each sub-frame pixel based on the standard position of the first sub-frame pixel relative to the image frame where each image frame occupies a different display position, the position of each transitioned sub-frame pixel will be spatially offset from the sub-frame pixels of consecutive image frames.

As per dependent claim 14, Tabata discloses wherein the means for generating is configured to generate two sub-frames for each of the high resolution images (col. 2, ll. 30-40), and wherein the means for alternately displaying is configured to display the two low resolution sub-frames for each of the high resolution images at a set of two spatially offset positions (Fig. 10).

As per dependent claim 16, Tabata discloses the different sets of two spatially offset positions include a first set and a second set (i.e. pixels 1 and 2) (Fig. 11), the first set including a first position, and a second postion (i.e. pixels 1 and 2) (Fig. 11), the second set including a third position spatially offset from the first and the second positions, and a fourth position (i.e. pixels 3 and 4) (Fig. 11).

Tabata fails to specifically discloses a second position diagonally offset from the first position in a first diagonal direction and a fourth position diagonally offset from the third position in a second diagonal direction that is substantially perpendicular to the first diagonal direction.

Tabata teaches by varying the order of the applied voltage to the liquid crystal display cells the order of the pixel positions are controlled in a crossing order (Fig. 11; col. 7, ll. 15-25).

It would have been obvious to one of skill in the art to incorporate a second position diagonally offset from the first position in a first diagonal direction and a fourth position diagonally offset from the third position in a second diagonal direction that is substantially perpendicular to the first diagonal direction with the disclosure of Tabata because varying the order of the applied voltage to the display cells alters the crossing order of the pixel positions such that one position would be diagonal from a second position.

As per dependent claim 17, Tabata discloses the means for generating is configured to generate four sub-frames for each of the high resolution images (col. 2, ll. 25-30; Fig. 4), and wherein the means for alternately displaying is configured to display the four low resolution sub-frames for each of the high resolution images at a set of four spatially offset positions (Fig. 4).

As per independent claim 19,similar rationale as applied in the rejection of claim 12 applies herein.

Response to Arguments

3. Applicant's arguments filed 4/4/05 have been fully considered but they are not persuasive.

Regarding claims 1 and 8, Applicant argues (pp. 7, Para 1) the previous office action provided no citation supporting Tabata teaching displaying the sub-frames for each image frame in a second set of the plurality of image frames at a second plurality of spatially offset positions that is different than the first plurality of spatially offset positions; and alternately displaying third and fourth sub-frames in positions spatially offset from all other displayed sub-frame positions.

In reply, Tabata teaches using a delta array to display high resolution images (col. 1, ll. 4-6). Tabata teaches a delta array displays image frames, which each consists of four divided image signals, e.g. sub-frames (col. 1, ll. 24-30; Fig. 2). Thus, Fig. 2 is representative of a display of multiple image frames each consisting of 4 subframes. Tabata's method of providing high resolution images uses a 4-point pixel shift system that repeatedly makes a transition of pixel positions at the four points, which represents the divided image signal, e.g. sub-frame, and makes a transition of the image signal in synchronization with the pixel position transition to display the images (col. 2, ll. 25-32). Thus, by transitioning the image signal each and the pixel position, Tabata suggests displaying consecutive image frames, each having shifted pixel positions, e.g. shifted

sub-frames, which are displaced from the previous shifted pixel positions of the previous image frame.

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chante Harrison whose telephone number is 571-272-7659. The examiner can normally be reached on Monday, Tuesday and Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on 571-272-3638. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chante Harrison
Examiner
Art Unit 2675

June 13, 2005

SUMATI LEFKOWITZ
SUPERVISORY PATENT EXAMINER